

selecting a second material having a second electronegativity for said electrically conductive spacer; and selecting a third material having a third electronegativity for said second ferromagnetic layer;

wherein an absolute value of a difference between said first and second electronegativities is minimized, wherein said first material and said second material comprise substantially the same crystal structure, wherein said first material comprises a first face centered cubic material and said second material comprises a second face centered cubic material.

20. [Amended] A method of making a magnetoresistive sensor formed with an electrically conductive spacer interposed between a first and a second ferromagnetic layer, comprising the steps of:

selecting a first material having a first electronegativity for said first ferromagnetic layer;

selecting a second material having a second electronegativity for said electrically conductive spacer; and

selecting a third material having a third electronegativity for said second ferromagnetic layer;

wherein an absolute value of a difference between said first and second electronegativities is minimized, wherein said step of selecting said first material includes the step of selecting a first Heusler alloy, wherein said first Heusler alloy has a composition of  $M_1MnM_2$ , where  $M_1$  is an element selected from the

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group consisting of Al, Ga, Ge, As, In, Si, Sn and Bi, and M<sub>2</sub> is an element selected from the group consisting of Co, Ni, Cu, Ir, Pd, Pt and Au.

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Claim 24, line 1, change "22" to --20--.

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38. [Amended] A magnetoresistive sensor comprising:  
first and second ferromagnetic layers, said first  
ferromagnetic layer comprising a first material having a first  
electronegativity; and  
an electrically conducting spacer interposed between said  
ferromagnetic layers, and comprising a second material having a  
second electronegativity;  
wherein an absolute value of a difference between said first  
and second electronegativities is minimized, wherein said second  
ferromagnetic comprises a third material having a third  
electronegativity and said first and third electronegativities  
are approximately equal, wherein said first material and said  
second material comprise substantially the same crystal  
structure, wherein said first material comprises a first body  
centered cubic material and said second material comprises a  
second body centered cubic material.

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Claim 39, line 1, change "36" to --38--.

Claim 47, line 1, change "46" to --38--.

Claim 48, line 1, change "27" to --38--.

50. [Amended] A magnetoresistive sensor as in Claim 38, wherein said first material is a first Heusler alloy, wherein said first Heusler alloy has a composition of  $M_1MnM_2$ , where  $M_1$  is an element selected from the group consisting of Al, Ga, Ge, As, In, Si, Sn and Bi, and  $M_2$  is an element selected from the group consisting of Co, Ni, Cu, Ir, Pd, Pt and Au.

Amend Claim 56 as follows:

56. [Amended] A method of optimizing the interfacial properties of a magnetoresistive sensor comprising the steps of:

selecting first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and

selecting an electrically conductive spacer disposed between said ferromagnetic layers and having a crystallographic orientation similar to said ferromagnetic crystallographic orientations and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized, wherein said absolute value is less than approximately 0.14 eV.

Amend Claim 66 as follows:

66. [Amended] A magnetoresistive sensor disposed on a substrate comprising:

first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic

layer having a first electronegativity; and

an electrically conductive spacer interposed between said ferromagnetic layers and having a crystallographic orientation similar to said ferromagnetic crystallographic orientations and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized, wherein said ferromagnetic layers comprise single crystal structures and said electrically conductive spacer comprises a single crystal.

Amend Claim 79 as follows:

79. [Amended] A magnetoresistive sensor as in Claim 38, including a substrate in atomic contact with a side of one of said ferromagnetic layers opposite said spacer; and  
an antiferromagnetic layer in atomic contact with a side of another one of said ferromagnetic layers opposite said spacer;  
wherein the sensor is a spin valve sensor;  
a buffer layer interposed between said first ferromagnetic layer and said substrate, wherein said buffer layer is an element selected from a group consisting of Ta, Cr, Fe, Pt, Pd, Ir and Au.

Amend Claim 82 as follows;

82. [Amended] A magnetoresistive sensor as in Claim 79, wherein said first ferromagnetic layer means is formed over said substrate;